



# Training the Next Generation of Diverse Scientists

A Social Scientist's Perspective

**Valerie Were**

Social Science Lead

NOAA Center for Earth System Sciences & Remote Sensing Technologies









# How to Measure Sediment in Small Streams





# Who Cares (about Salmon)?



Anglers



Native Americans



Consumers




# What are the Social Sciences?

**Geosciences** study the Earth – oceans, atmosphere, rivers and lakes, ice sheets, soils, rocks, and volcanoes

**Social Sciences** study people and the relationships among them

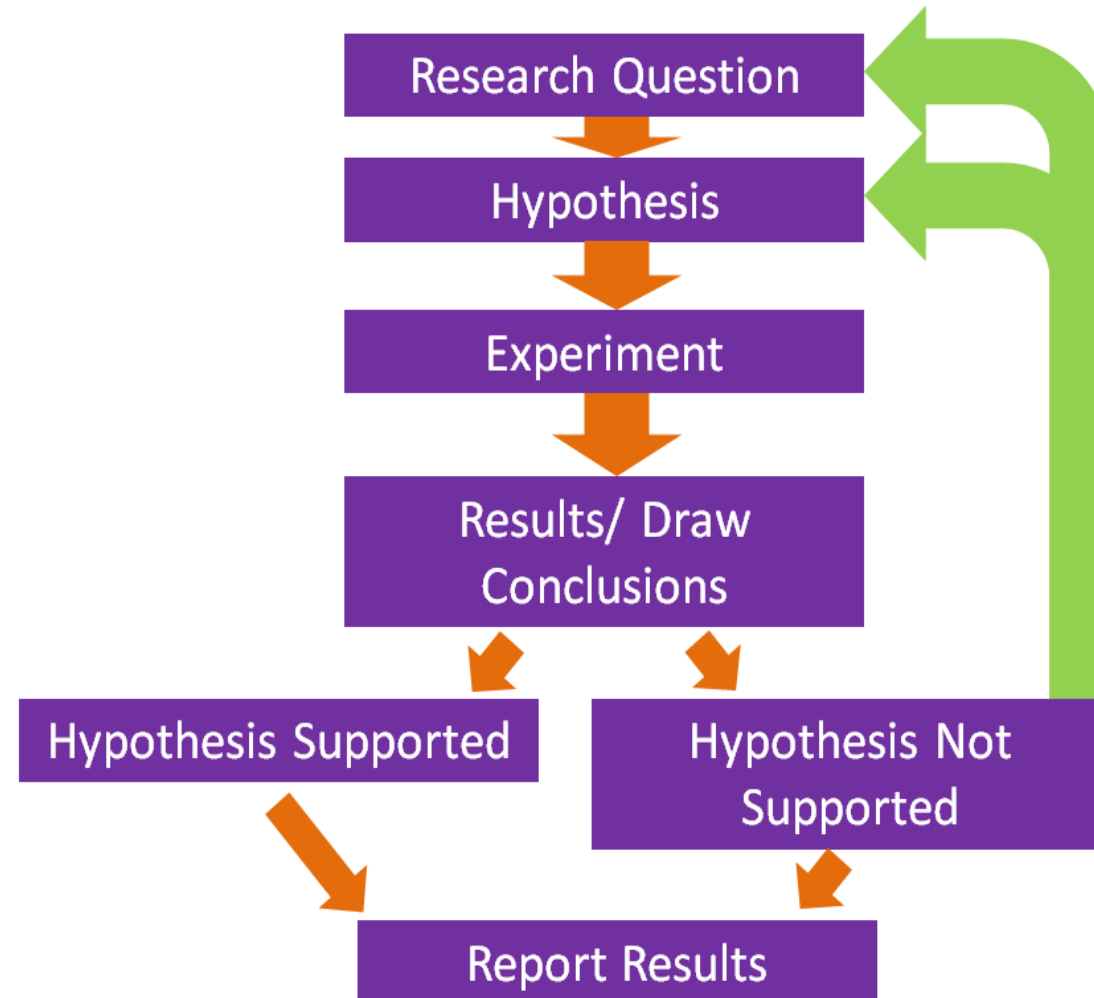




- 
- **Sociology** studies patterns of social relationships, social interaction, and culture of everyday life
  - **Anthropology** studies human origins and the evolution of various beliefs and social customs
  - **Economics** studies the production, distribution, and consumption of goods and services



# Social Sciences use The Scientific Method





# **Link Research To Social Impact and Decision Making**

Ask The Three Questions...

1. For whom is the information/are the data useful?
2. How are they using your output to make decisions?
3. How will it make their lives better?



# The Minnesota River Basin



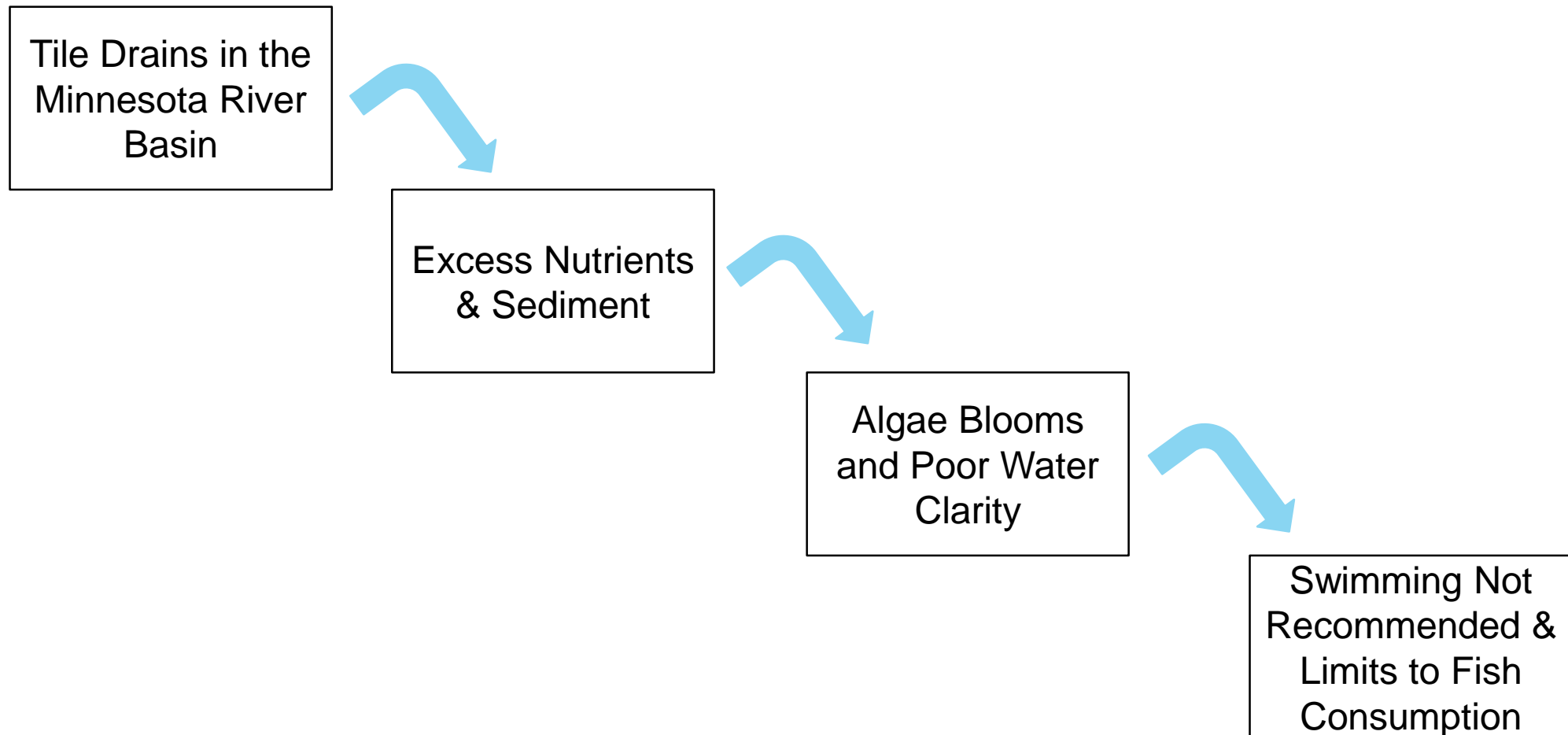
**Minnesota River**



**Mississippi  
River**



# Tracing the Social Impact from Val's M.S. Thesis





## **1. For whom is the information/are the data useful?**

- Minnesota Pollution Control Agency

## **2. How are they using your output to make decisions?**

- Benchmarks for other streams

## **3. How will it make their lives better?**

- Baseline information for future comparison



## **Provide the Appropriate Training**

- Educational/Skill Development
- Institutional Research Compliance Requirements



# Choose Your Adventure

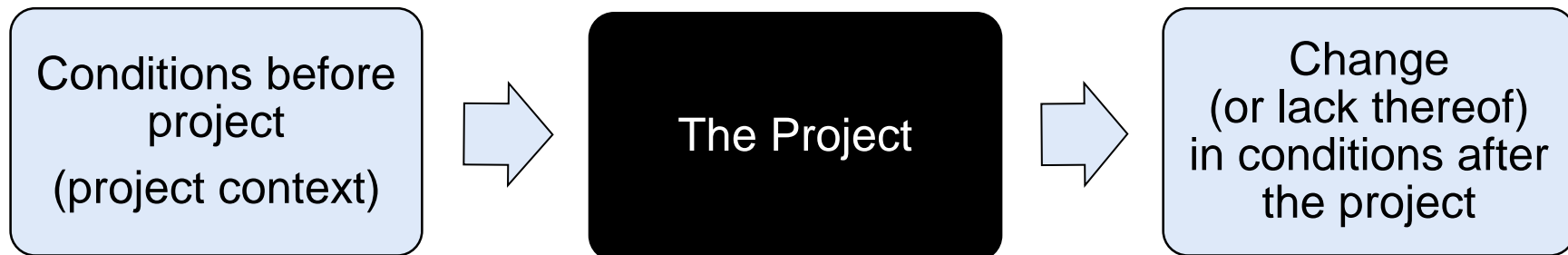


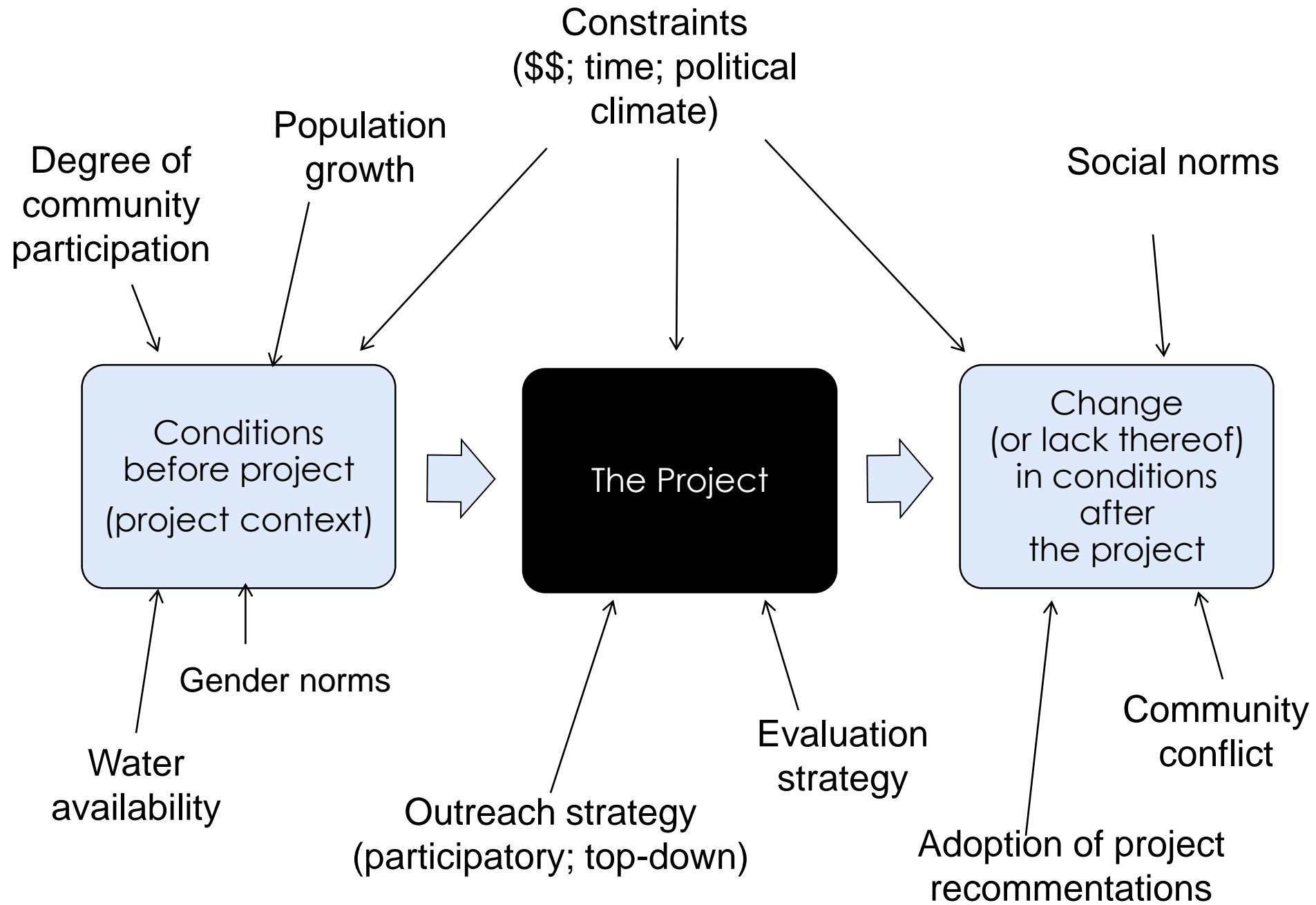
Fish Processing Plant



Mosquito Nets

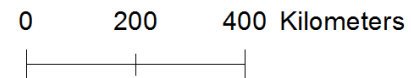
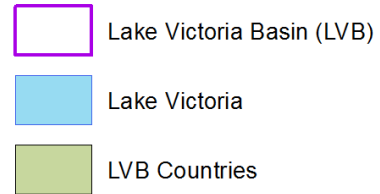
# Typical NGO Project: The Black Box Model







# The Lake Victoria Basin





## **Val's Doctoral Research Questions**

1. How do NGOs monitor and evaluate their projects?
2. Which methods and approaches do NGOs use to engage the community in projects?
3. How do factors such as customary rules and gender roles in the community influence NGO projects?

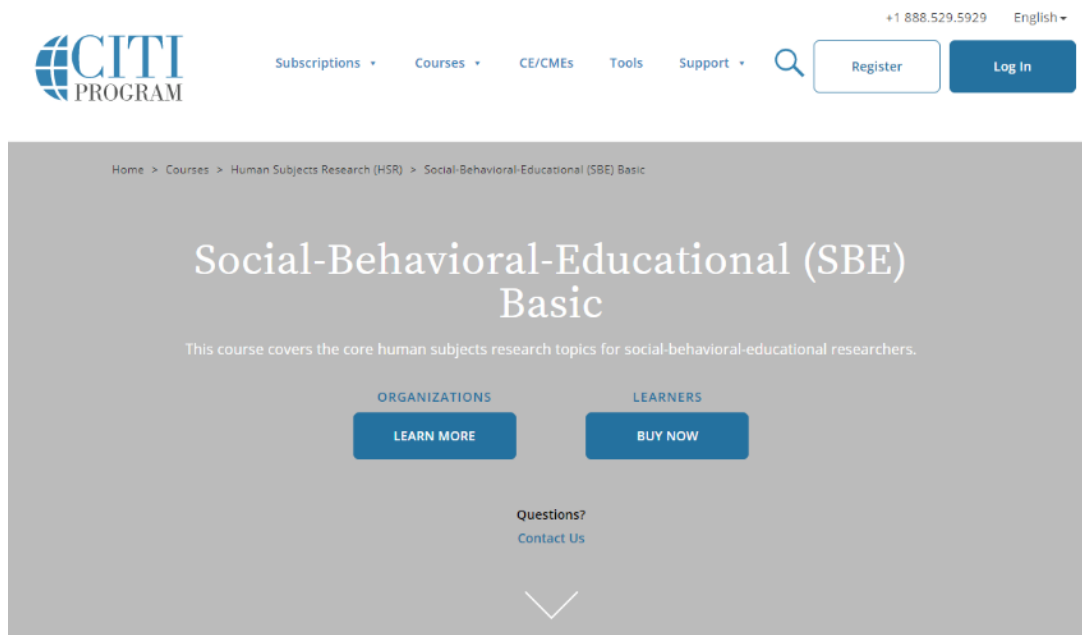


## **Research Prep: Social Sciences Classes**

- Intermediate Social Statistics
- Ethnographic Research Methods
- Program Evaluation
- Theory Building



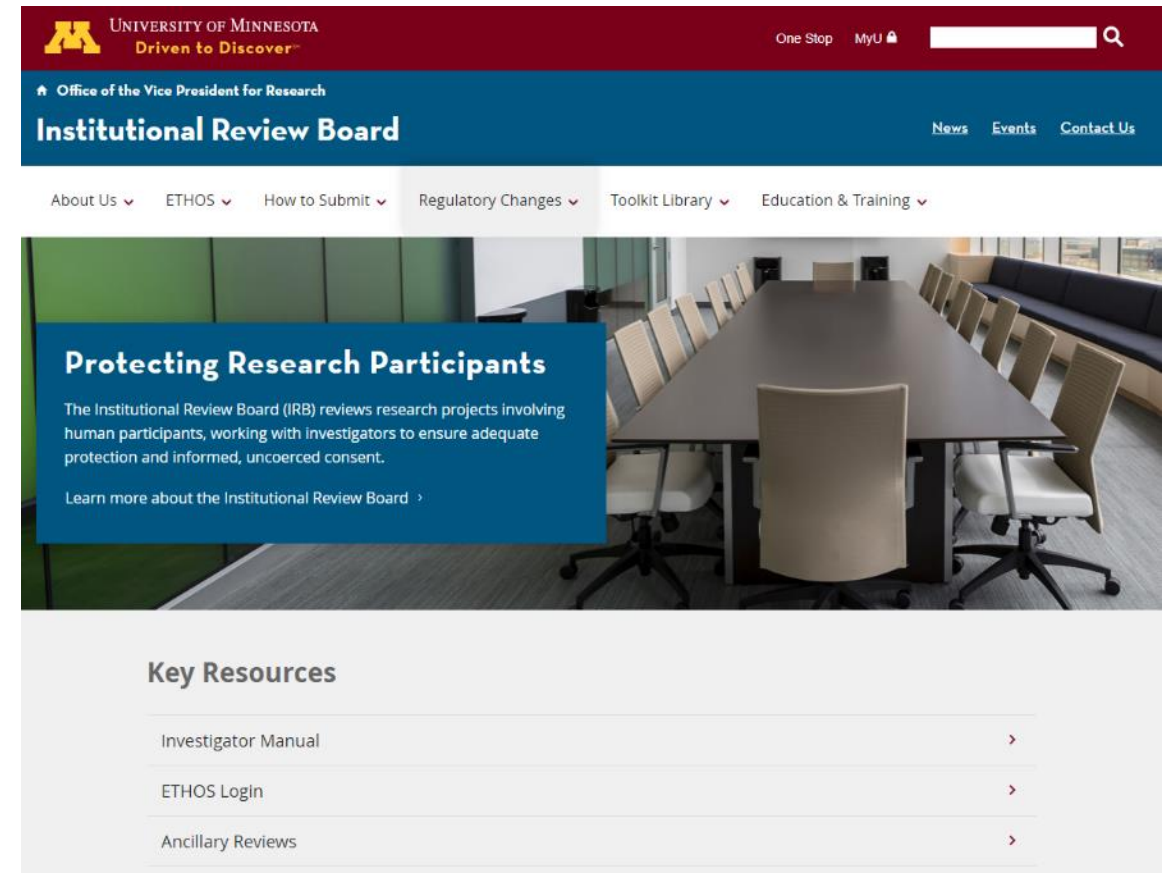
# Research Prep: Ethics Training and IRB Approval




The screenshot shows the CITI Program website. The header includes the CITI PROGRAM logo, navigation links for Subscriptions, Courses, CE/CMEs, Tools, and Support, a search icon, and buttons for Register and Log In. The main content area is titled "Social-Behavioral-Educational (SBE) Basic" and includes a description: "This course covers the core human subjects research topics for social-behavioral-educational researchers." Below this, there are two buttons: "LEARN MORE" under "ORGANIZATIONS" and "BUY NOW" under "LEARNERS". A "Questions? Contact Us" link is also present.

## About this Course

The SBE Basic course provides an introduction to social-behavioral-educational research with a focus on the protection of human subjects. It offers historic and current information on regulatory and ethical issues important to the conduct



The screenshot shows the University of Minnesota Institutional Review Board website. The header includes the University of Minnesota logo and the tagline "Driven to Discover". Navigation links include One Stop, MyU, and a search icon. The main content area is titled "Institutional Review Board" and includes links for News, Events, and Contact Us. Below this, there are links for About Us, ETHOS, How to Submit, Regulatory Changes, Toolkit Library, and Education & Training. A large image of a conference room is featured, with a blue overlay containing the text "Protecting Research Participants" and a description: "The Institutional Review Board (IRB) reviews research projects involving human participants, working with investigators to ensure adequate protection and informed, uncoerced consent." A link "Learn more about the Institutional Review Board" is also present. At the bottom, there is a section titled "Key Resources" with links to the Investigator Manual, ETHOS Log/in, and Ancillary Reviews.

- 
1. How do NGOs monitor and evaluate their projects?
    - **No Plan, In House, Outsource**
  2. Which methods and approaches do NGOs use to engage the community in projects?
    - **Most were participatory**
  3. How do factors such as customary rules and gender roles in the community influence NGO projects?
    - **Depends on the project and community**



**Gained the skills, now what?**

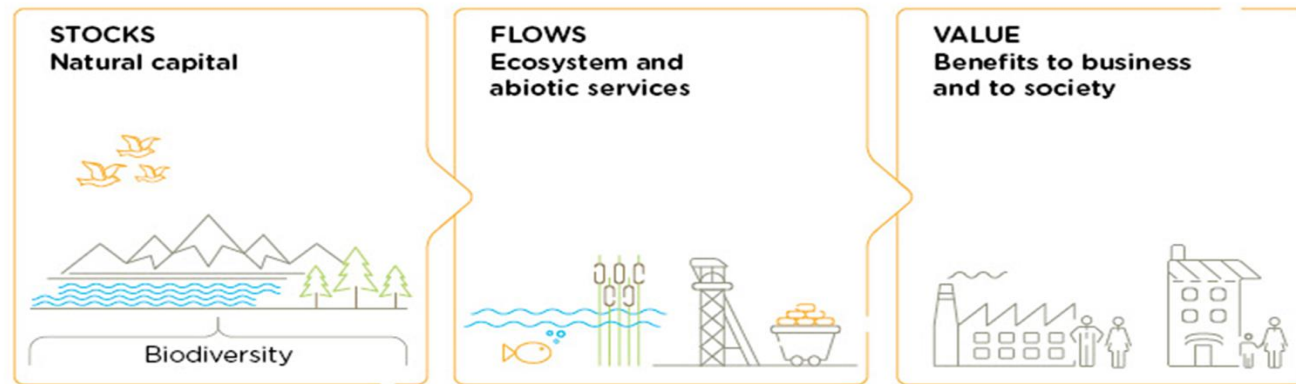
Applying social sciences professionally



# Response and Recovery to Natural Disasters



# Businesses and Natural Capital



Acres of protected eel grass beds - Stock

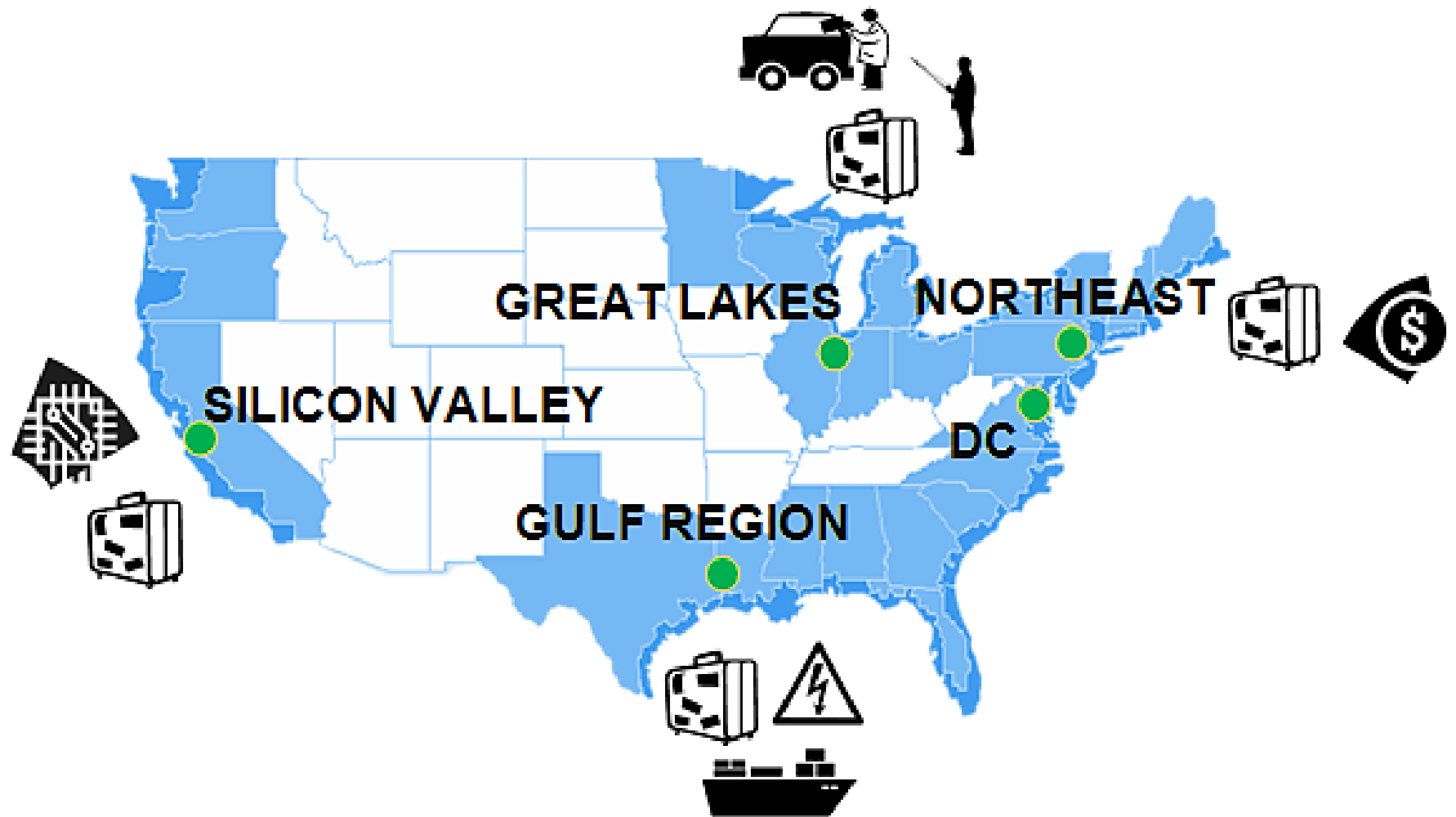


Improvement in water clarity – Service




Water clarity is important to recreational boaters - Value

# Business Roundtables







Region	Focus Sector(s)	Partners and Locations
Gulf of Mexico	Oil and Gas, Shipping	Rice University's Center for Energy Studies at Baker Institute for Public Policy, Houston, TX
Great Lakes	Manufacturing	Case Western Reserve University's Strategic Innovation Lab and The Cleveland Foundation, Cleveland, OH
Northeast	Finance, re/insurance, and real estate	Columbia University's Earth Institute, New York, NY
Silicon Valley	High-tech, tourism	Stanford University's Woods Institute, Silicon Valley, CA

# The Center's Mission

To educate, train, and graduate a diverse and competent cadre of students, especially from underrepresented communities, and create a diverse and skilled workforce in NOAA-related disciplines

# The Consortium



# Social Science Training at the Center

NOAA Social Science Basics Mini Course	Student Story Maps	Social Science Research Question (as appropriate)*
<ul style="list-style-type: none"><li>• Agency-developed webinar</li><li>• Added benefit of putting social science in a NOAA context</li></ul>	<ul style="list-style-type: none"><li>• Communicate science to a non-technical audience, and</li><li>• Think about the social impact and decision-making implications</li></ul>	<p>*Some students already combine social and natural science and engineering</p>





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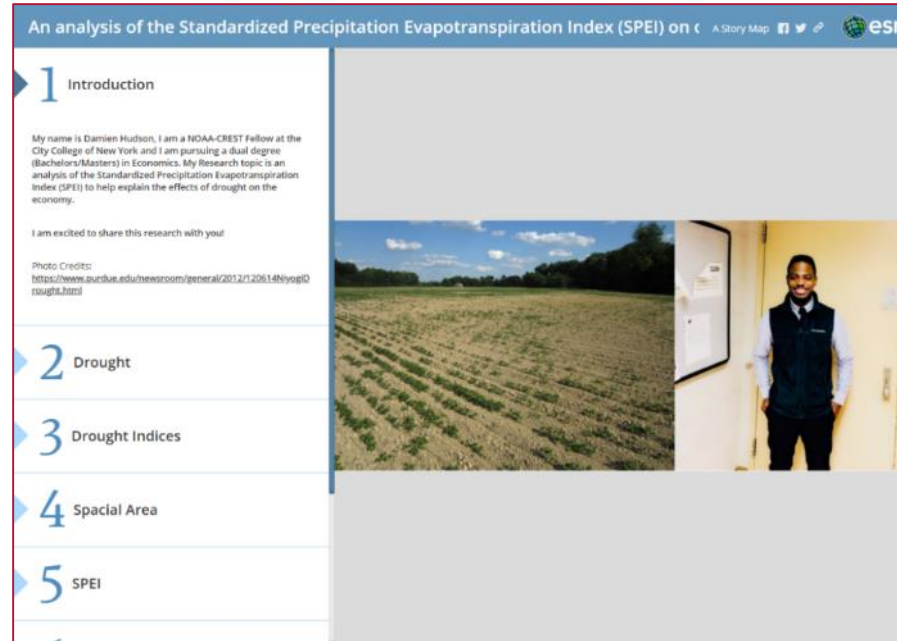
# Spring 2019 Graduate



**Damien Hudson**

M.S. Student  
CUNY/CCNY

Graduated Spring 2019



Story Map URL: <https://arcg.is/54q0D>

**An Analysis of the Standardized Precipitation Evapotranspiration Index (SPEI) on Drought Based on Economic Impacts in the Northeast (US)**

**Advisor:** Dr. Nir Krakauer

**NOAA Mentors:** Dr. Ayeisha Brinson and Dr. Christopher Lauer (Performance, Risk, and Social Sciences)



## Spring 2019 Graduate



**Nicolas Maxfield**

M.S. Student  
CUNY/CCNY



Pictures: Nicolas  
Maxfield



**Hydrological Drought Trends in the U.S. using Low-flow Observations**

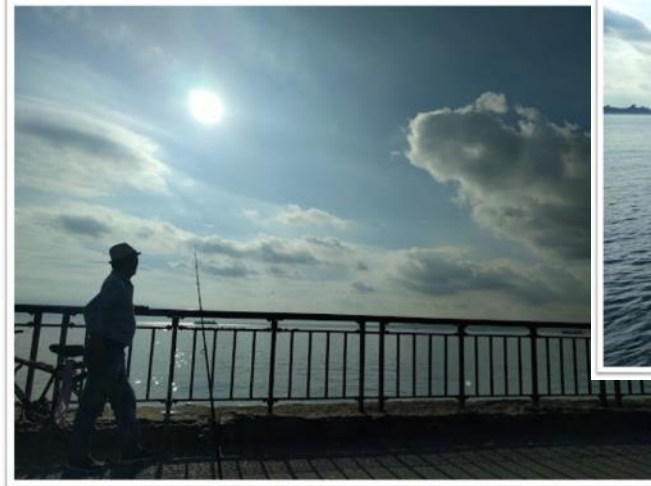
**Advisor:** Dr. Indrani Pal

**NOAA Mentor:** Dr. Cameron Speir (NOAA Southwest Fisheries Science Center)





**Rose Jimenez**  
Ph.D. Student  
CUNY/Graduate Center



Pictures: Rose Jimenez

## **Physical and Social Geographic Effects of Combined Sewer Outfall Overflows from New York City on Surrounding Environment**

**Advisors:** Dr. Juliana Maantay and Dr. Reza Khanbilvardi

# Undergraduates



**Abimael Castro-Rivera**

Campus: University of Puerto Rico at Mayaguez

Research Topic: Risk Communication and Hurricanes



**Isabel Lopez**

Campus: University of Texas at El Paso

Research Topic: Alternatives for Reducing Nuisance  
Flooding in an Urban Neighborhood



**Erin Wengerter**

Campus: The City College of The University of New York

Research Topic: The Human and Economic Impacts of Flooding  
within New York City

# Social Science Seminar Series



**February 2019**

Dr. Valerie Were

**Title:** An Approach to Integrating NOAA Mission-Related Science and Social Science at NOAA-CESSRST



**March 2019**

Dr. Kaveh Madani

**Title:** Modeling and Managing Coupled Human Environment System of Systems



**April 2019**

Dr. Ivonne Santiago, The University of Texas at El Paso

**Title:** Drinking Water for Underserved Communities: The importance of Understanding the Needs, Perceptions, and Practices



**May 2019**

Dr. Simon Gruber

**Title:** Selected Issues and Priorities for Applied Water Research in the Hudson and Adjacent Basins

## In Summary...

- Ensure students **understand and communicate the social impacts and decision making implications** of their research
  - Teach them to answer The Three Questions
- Provide appropriate training when needed
- Show them how social sciences are applied to address environmental issues





# Contact Information

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212-650-8628

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